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ABSTRACT

The anxiety or confidence that teachers display towards computers and other new technologies is a subject which should be of prime importance to teacher educators and educational technologists. Many teachers feel ill-prepared and resist the integration of computers and other technologies into their instruction. Since 1976 there has been a growing body of literature on the subject of teachers' attitudes towards computers, pointing out that teacher educators and teacher preparation programs could play a vital role in helping teachers become less anxious and more confident computer users. Many states now require an educational technology component in preservice teacher training, most often taking the form of a basic applications or "computers in education" course. Eleven strategies that have been utilized successfully in teacher education courses at three universities are outlined. According to course evaluations and interviews with preservice teachers, these strategies have been successful in reducing computer anxiety and increasing confidence in using computer technologies for education. Recommendations for teacher educators who are interested in helping preservice and inservice teachers become more acquainted and comfortable with new instructional technologies are provided. (Contains 13 references.) (LL)

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The anxiety or confidence that teachers display towards computers and other new technologies is a subject which should be of prime importance to teacher educators and educational technologists. Many discussions of school "restructuring" include the infusion of instructional technology processes and products (Reiser & Salisbury, 1991). Several new education initiatives at the federal, state, and local levels, include the use of technology among their major components (Fawson, 1992). Although there are many players involved in these initiatives, including government officials, district and school administrators, staff, and the general public, it is most likely that those who will be primarily responsible for the implementation of technology in education will be classroom teachers. Successful implementation of computers into the classroom is highly dependent upon the positive attitudes of teachers and administrators (Stevens, 1982). Since the modeling of behavior can either strengthen or weaken inhibitions (Bandura, 1977), it is important that teachers become confident in their use of computers and be able to exhibit positive attitudes toward technology, thus endowing their students with confidence in their own use of computers.

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Unfortunately, many teachers feel ill-prepared and resist the integration of computers and other technologies into their instruction (Heinich, 1991; Piña, 1992). Cambre and Cook (1985) reported that teachers in their study had higher levels of anxiety regarding the use of computers than students. Many teachers feel that they need to be proficient at programming in order to use computers, while others are afraid of looking foolish, getting lost, or pressing the wrong button and damaging the computer (Piña & Savenye, 1992).

Technology integration programs that do not address the issue of alleviating computer anxiety and increasing teacher confidence in using computers, may face a great stumbling block in either overt or covert resistance from teachers. The purpose of the present paper is to outline strategies that have been utilized successfully in preservice teacher education courses to lessen computer anxiety and increase confidence in using computer technologies for education.

Computer anxiety

Since 1976, there has been a growing body of literature on the subject of attitudes of teachers toward computer technology (Savenye, 1993). Cambre and Cook (1987) describe computer anxiety as "the fear of using computers as measured by physiological changes or responses on self-report instruments. They feel that computer anxiety is viewed best as a temporary anxiety state, rather than a permanent anxiety trait and, as such, it should be susceptible to change.

Much of the research into the computer anxiety of preservice teachers has produced inconclusive results as to the interaction between computer anxiety and age or gender. Cambre and Cook (1987) found significantly higher anxiety in females than in males. Older

learners were also found to possess a higher degree of anxiety than younger learners. In the same year, however, Honeyman & White (1987) reported in their study that gender and age did not significantly affect computer anxiety.

Teacher education

Many states now require an educational technology component in the preservice teacher training. This component most often takes the form of a basic applications or "computers in education" course. Savenye and her colleagues found that participants in a computer applications course for preservice teachers experienced statistically significant changes in computer anxiety and confidence in learning about and using computers (Savenye, 1993; Savenye, Davidson & Orr, 1992). The teachers' preservice training can play a crucial role in developing positive teacher attitudes toward technology.

Strategies

The following strategies have been utilized in preservice teacher education courses at three universities. These strategies have been successful in reducing anxiety and increasing confidence, according to course evaluations and interviews with preservice teachers (Piña & Harris, 1993; Piña & Savenye, 1992).

- Learners were encouraged to "play" and push buttons freely. They learned soon that there was no "self-destruct" button that they would inevitably push.
- Computers and other peripherals that were in the process of being repaired were brought into the class and opened up. Learners were given a chance to see and touch the components inside the computer, thus removing some of its "mystery."
- Overhead transparencies used during lecture sessions were replaced with Hypercard-based presentations, utilizing an LCD projection screen. The learners witnessed simple computerized "transparencies" being created on the screen by the instructor, thus demonstrating the ease of Hypercard.

- Learners were introduced to easy-to-use graphics programs and were taught how to make greeting cards, signs, calendars and other items to use in their personal lives.

- Drawing and paint programs were introduced into the curriculum. These applications allowed the learners to exercise creativity and learn that the computer can be used by the artist as well as the scientist.

- Quizzes for the course were given on the computer. In a session later on in the course the advantages of computerized quizzes were explained (e.g. class time not taken up by quizzes, greater flexibility for test taking, less paperwork and grading time, etc.)

- Learners were given demonstrations of electronic mail and on-line computer services. They were encouraged to communicate with the professor and others using electronic mail and interactive discussion groups via the Internet.

- Teaching the utilization of word processors, spreadsheets and databases was done within the context of how to make the teacher's life more organized. The learners used these tools to create budgets, resumes, student records, grade rolls, and professional correspondence.

- A class period was introduced by a "talking" computer--in actuality a standard Macintosh computer using the MacTalker utility. Learners were then allowed to come in front of the class and make the computer talk using this easy utility.

- The computer was "humanized" to an extent by drawing correlates with human experiences (e.g. compare and contrast input and output devices with the senses and bodily movement).

- Learners were given a tedious task to do by hand and then were shown how the computer could perform the same task in seconds, demonstrating to the students that the front end time spent learning computers would pay off.

Recommendations

Below are recommendations for teachers educators who are interested in helping preservice and inservice teachers become more acquainted and comfortable with new instructional technologies:

- Prospective teachers can easily be scared away by the jargon of computers and instructional technology. Teacher trainers must become "bilingual," and able to communicate at the novice level (Piña & Savenye, 1992).

- Preservice teachers must receive a broader view of computer technology than the common administrative applications currently being taught. The computer should be utilized to enhance creativity, satisfy curiosity, and personalize instruction, not just shorten the time it takes to complete administrative tasks.

- We cannot teach what we do not know. Teacher educators must keep current on applications of new technologies. Examples of successful integration of technologies can be found in journals and magazines, such as Tech Trends, T.H.E. Journal, Technology and Learning, Media and Methods, and Educational Technology.

- Learning activities must be designed to insure a high degree of initial success, to immunize learners from acquiring learned helplessness (Banks & Havice, 1989).

- Interactive multimedia is expensive and carries certain hardware requirements. Show teachers how to start small, utilizing their current systems. Start by adding one attribute at a time (more memory, CD-ROM, audio, video, etc.).

- Technology is interdisciplinary in nature and may involve many different personnel. Teacher educators should form cooperative alliances or user groups with media, telecommunications, library, and computing personnel in the school or district, as well as with other classroom teachers and even students. Many of these people will have resources to assist preservice teachers and teacher educators.

- Establish partnerships with business and industry, hardware and software vendors, and other educational institutions. Many vendors provide on-site training for customers or license certain individuals to provide training in a specific geographic area. There may also be displays, discounts and funding available as a result of these partnerships.

- Honeyman and White (1987) found that significant change in computer anxiety occurred after approximately 30 hours of hands-on exposure to computers. Computer applications curriculum should center around computer-based activities, rather than abstract lectures.

- Technology is not an end unto itself. Any utilization of technology must be for the integration and enhancement of the curriculum. The primary question for the teacher considering technology should always be "Can this technology enhance the curriculum, facilitate learning and make teaching more effective?"

Conclusion

Computer technologies will likely play an important role in the efforts to improve our educational system. Although these efforts will have many players, it is ultimately the teachers and their students that will decide how technology is integrated at the classroom level. Programs and initiatives that include the use of computer technologies in education as a component should consider seriously the issue of teachers' computer anxiety and confidence. Teacher educators and teacher preparation programs could play a vital role in helping teachers become less anxious and more confident computer users.

References

Bandura, A. (1977). *Social learning theory*. Englewood Cliffs, NJ: Prentice-Hall.

Banks, M. J., & Havice, M. J. (1989). Strategies for dealing with computer anxiety. *Educational Technology 29*(1).

Cambre, M. A., & Cook, D. L. (1985). Computer anxiety: Definition, measurements and correlates. *Journal of Educational Computing research 1*(1).

Cambre, M. A., & Cook, D. L. (1987). Measurement and remediation of computer anxiety. *Educational Technology 27*(12).

Fawson, E. C. (Ed.). (1992). *Focus on reform: State initiatives in educational technology*. Washington, DC: Association for Educational Communications and Technology.

Heinich, R. (1991). Restructuring, technology, and instructional productivity. In G. Anglin (Ed.) *Instructional technology: Past, present and future*. Englewood, CO: Libraries Unlimited.

Honeyman, D. S., & White, W. J. (1987). Computer anxiety in educators learning to use the computer: A preliminary report. *Journal of Research on Computing in Education 20*(2).

Piña, A. A. (1992, November). Design, development and implementation of a middle school computer applications curriculum. Paper presented at the annual conference of the Arizona Educational Research Organization, Phoenix, AZ.

Piña, A. A., & Harris, B. R. (1993, April). Reducing Preservice Teachers' Computer Anxiety. Paper presented at the annual conference of the Arizona Educational Media Association, Phoenix, AZ.

Piña, A. A., & Savenye, W. C. (1992, February). Beyond computer literacy: How can teacher educators help teachers use interactive multimedia? Paper presented at the annual conference of the Association for Educational Communications and Technology, Washington, D.C.

Reiser, R. A., & Salisbury, D. F. (1991). Instructional technology and public education in the United States: The next decade. In G. Anglin (Ed.) *Instructional technology: Past, present and future*. Englewood, CO: Libraries Unlimited.

Savenye, W. C., Davidson, G. V., & Orr, K. B. (1992). Effects of an educational computing course on preservice teachers' attitudes and anxiety toward computers. *Journal of Computing in Childhood Education 3*(1).

Savenye, W. C. (1993, January). Measuring teacher attitudes toward interactive computer technologies. Paper presented at the annual conference of the Association for Educational Communications and Technology, New Orleans, LA.

Stevens, D. J. (1982). Educators' perceptions of computers in education: 1979 and 1981. *AEDS Journal*.